

REMARKS

These remarks are responsive to the Final Office Action, dated April 5, 2007. Currently claims 1, 3-17, 19-26 are pending with claims 1, 7, and 17 being independent. Claims 19-26 are new. Claims 1 and 3-17 are amended to expedite prosecution of the application to allowance. The support for these amendments is found in Applicants' specification at least on pages 12, line 3 to page 13, line 18; page 15, line 3 to page 18, line 11; and page 18, line 23 to page 19, line 12.

35 U.S.C. 102(e)

In the Final Office Action, the Examiner maintained his rejections of claims 7-10 and 14-16 as being anticipated by U.S. Patent No. 6,847,982 to Parker et al. (hereinafter, "Parker"). This rejection is respectfully traversed.

Amended claim 7 recites, *inter alia*, a method for protecting data including storing a version of a file within a set of files on a primary disk storage system; capturing a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy; maintaining a list of modified and/or created files since last captured snapshot; examining the protection policy associated with the set of files to determine where and how to protect files associated with the set of files; and replicating the version of the file to a repository specified by the protection policy, wherein the repository includes at least one of a local repository and a remote repository.

Parker discloses an intelligent data inventory and asset management software system. (Parker, Col. 7, lines 18-23). The Parker system includes an Akashic File Clerk that maintains an inventory database, which includes electronic signatures for every file on a work station and all new and changed files. (Parker, Col. 7, line 24-28). Parker allows a client to determine which files are critical and which are not critical, then Parker runs inventories to capture the files that

have changed and forwards the changed files to an Akashic Vault for storage and processing. (Parker, Col. 7, lines 28-35). During inventories, Parker identifies files that have 1) changed since the last inventory, 2) been deleted since the last inventory, 3) been added since the last inventory. (Parker, Col. 8, lines 17-26). Parker does not capture a snapshot of the set of files at a particular point in time based on a backup frequency defined in a protection policy and maintain a list of modified and/or created files since last captured snapshot, as recited in the amended claim 7. Instead, Parker's Akashic File Clerk that contains signatures of files, runs an inventory on the changed files, and then stores the files in the Akashic Vault, but does capture a snapshot of the set of files nor does it examine a protection policy and determine where and how to protect files, as recited in amended claim 7.

Parker's Akashic Vault is a computer that is attached as a node to the client's network which stores captured files. (Parker, Col. 7, lines 44-46). After capturing files, Parker's Vault generates reverse and forward deltas, then deletes the previous version and archives the newest compressed version of the file. (Parker, Col. 9, line 54 to Col. 10, line 4). Parker generates a list of forward delta(s) and copies of the new files and sends them to an offsite Library System. (Parker, Col. 10, lines 5-8). This is different than replicating the version of the file to a repository specified by the protection policy, wherein the repository includes at least one of a local repository and a remote repository, as recited in claim 7. As such, Parker does not disclose all elements of claim 7 and claim 7 should be allowed.

Claims 8-10 and 14-16 are dependent on the independent claim 7. As such, claims 8-10 and 14-16 are not anticipated by Parker for at least the reasons stated above with regard to claim 7. Hence, the rejection of claims 8-10 and 14-16 is respectfully traversed. The Examiner is

requested to reconsider and withdraw his rejection of claims 8-10 and 14-16. New claims 19-26 are also patentable over Parker for at least the reasons stated above with regard to claim 7.

35 U.S.C. 103(a)

In the Final Office Action, the Examiner maintained his rejections of claims 1-2, 6, and 17-18 as being unpatentable over a combination of U.S. Patent No. 6,163,856 to Dion et al. (hereinafter, "Dion") in view of U.S. Patent No. 5,78,395 to Whiting et al. (hereinafter, "Whiting"). This rejection is respectfully traversed.

In the Office Action, the Examiner stated that Dion discloses all of the elements of claim 1 but "does not teach a policy cache operative to store a protection policy associated with a set of files." The Examiner stated that Whiting teaches this element of claim 1. (Office Action, page 6).

Amended claim 1 recites, *inter alia*, a data protection system including a fileserver configured to contain shares of data and to be connected with a repository, wherein the repository is configured to store a replica of a file, the fileserver includes: a filter driver operative to intercept input or output activity initiated by client file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; a file system in communication with the filter driver and operative to store client files; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver.

Dion discloses a file disaster recovery system that includes a geographical replication software, called Telescope, that captures state changes to the PXFS (a distributed/cluster file system) file system. (Dion, Abstract; Col. 9, lines 43-45). Telescope encodes state changes, at a local site, as operations and their parameters and then transmits them to a remote site. (Dion, Col.

9, lines 45-49). Telescope then decodes the operations and copies them to a file system running at a local site. (Dion, Col. 9, lines 49-55). This is different from a filter driver operative to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred, as recited in amended claim 1 of the present application. Dion does not capture any snapshots and/or maintain a list of modified and created files, instead it simply copies a state of the system from the local site to the remote site.

Dion also fails to disclose, teach or suggest, *inter alia*, the filter driver configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, as recited in amended claim 1. Instead, Dion discloses capturing state changes to the system, encoding them at a local site, and then copying them to a remote site. (Dion, Col. 9, lines 37-55).

Whiting does not cure the deficiencies of Dion. Whiting discloses a lower cost backup solution. (Whiting, Col. 4, lines 63-64). Whiting's solution creates four types of files during backup: new, unchanged, updated, and modified. (Whiting, Col. 7, lines 59-65). Each time a backup set of files is migrated, Whiting's solution searches for matching files for each new or updated file. (Whiting, Col. 8, lines 8-16). Whiting fails to disclose, teach or suggest a filter driver operative to intercept input or output activity initiated by client file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred, as recited in amended claim 1.

Thus, neither Dion, Whiting, nor their combination disclose, teach or suggest all elements of the amended claim 1, and claim 1 should be allowed.

The improper combination of Dion and Whiting does not realize the present invention. Instead, the combination of Dion and Whiting discloses a disaster recovery system that checks a state of the system and performs a backup by separating files into four separate categories. This is different from the present invention. The combination of Dion and Whiting fails to disclose, teach or suggest, *inter alia*, a filter driver operative to intercept input or output activity initiated by client file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, as recited in the amended claim 1.

Thus, the combination of Dion and Whiting does not render amended claim 1 obvious. As such, this rejection is respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of claim 1.

Additionally, Dion intercepts input and output activity for the purpose of updating a replicated image of the files that change. Dion is a file system replication product that maintains no historical versions of data at both sites, only the latest copy of data at remote sites. Dion does not support backup. In Dion, modified files are updated and then used to replace earlier versions of the files. Dion does not store file history, it only replicates a current copy of data. Further, Dion employs a log file update engine. All changes to a file are “played back” remotely with this log, but in the end, only the latest version of the file remains. Conventional replication systems, such as Dion, suffer from a problem of local data corruption, which causes remote data to be corrupted almost immediately thereafter. One of the advantages of the present invention is that it guards against that by maintaining a complete version history at both sites. If a new version

becomes corrupt, an earlier version of a file can be restored from either the local or the remote site. Further, Dion, as many other conventional replication systems, suffers from a problem of having to accidentally or maliciously deleting files from local and remote sites. In conventional systems, a local delete will cause a remote delete, and there will be no remaining data to recover from. Another advantage of the present invention is that it does not destroy accidentally deleted files in order to provide long term historical backup at both sites. Conventional replication systems, such as Dion, cannot recover from accidental or maliciously deleted files on their own.

Whiting employs check-summing to detect if two or more files are identical. When it discovers two or more identical files, it replaces all extra copies of files with pointers back to a single copy. Whiting further employs encryption of backup data. Whiting also performs Karp/Rabin fingerprinting of data to reduce the amount of disk storage consumed by the files they are storing. An advantage of the present invention is that it maintains both the primary storage system and the backup repository. The present invention recognizes which files in the backup repository should be associated with each other and performs a delta compression operation to extract only the parts of that file that have changed so that only these are maintained in the onsite and offsite backup repository. Whiting requires that client workstations copy backup data from their workstations' primary disk storage units to a pre-assigned location or directory on the backup fileserver so that that data can be backed up. An advantage of the present invention is that a fileserver acts as a primary storage and the local and remote backup repositories act like a disk-based backup system. Further, Whiting actually takes up additional storage space in the backup fileserver to store metadata for unchanged files on every backup period. An advantage of the present invention is that it sends files that have been modified to the backup repository to be protected.

Claim 17 is patentable over the combination of Dion and Whiting for at least the reasons stated above with regard to claim 1. As such, the rejection of claim 17 is respectfully traversed. The Examiner is respectfully requested to reconsider and withdraw his rejection of claim 17.

Claims 2, 6, and 18 are dependent on the independent claims 1 and 17, respectively. Thus, claims 2, 6, and 18 are patentable over the combination of Dion and Whiting for at least the reasons stated above with regard to claim 1. Thus, the rejection of claims 2, 6, and 18 is respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of claims 2, 6, and 18. New claims 19-26 are patentable over the combination of Dion and Whiting for at least the reasons stated above with regard to claim 1.

In the Final Office Action, the Examiner maintained his rejections of claims 3-5 under 35 U.S.C. 103(a) as being unpatentable over Dion in view of Whiting and further in view of U.S. Publication No. 2003/0070001 to Belknap et al. (hereinafter, "Belknap").

Amended claims 3-5 are dependent on independent amended claim 1. As such, claims 3-5 are patentable over the combination of Dion and Whiting for at least the reasons stated above with regard to claim 1. Belknap does not cure the deficiencies of the combination of Dion and Whiting. Belknap discloses a media manager which incorporates an application program interface (API) for converting high-level generic commands into device-level commands for output to a media device. (Belknap, Abstract). Further, Belknap determines whether a media object is located within a multimedia data storage system by searching an index of media objects stored within the system. (Belknap, para. [0063]-[0064]). Since Applicants have cancelled a limitation of claim 1 for which the Examiner used Bellknap to support his rejection of claims 3-5, the rejection based on Bellknap is now moot. Additionally, Belknap fails to disclose, teach or suggest, *inter alia*, a filter driver operative to intercept input or output activity initiated by client

file requests and further configured to capture a snapshot of a set of the shares of data at a particular point in time and to maintain a list of modified and/or created files since a last snapshot occurred; the filter driver is configured to capture the snapshot at a specified time interval based on a backup frequency defined in a protection policy stored in the fileserver, as recited in the amended claim 1. Thus, the combination of Dion, Whiting, and Belknap does not render claim 1 obvious. As such, amended claims 3-5 are not rendered obvious by the combination of Dion, Whiting, and Belknap. Thus, this rejection is respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of amended claims 3-5.

In the Final Office Action, the Examiner maintained his rejections of claims 11-13 under 35 U.S.C. 103(a) as being unpatentable over Parker in view of Santry et al., "Deciding when to forget in the Elephant file system" (hereinafter, "Santry"). This rejection is respectfully traversed.

Claims 11-13 are dependent on independent claim 7. As such, claims 11-13 are patentable over Parker for at least the reasons stated above with regard to claim 7. Santry does not cure the deficiencies of Parker. Santry discloses a file system that keeps old versions of the file for recovery purposes (Santry, pg. 111, section 1). In some instances, Santry does not keep old versions of the files and only keeps a single current version. (Santry, pg. 113, section 3.3). However, neither Parker, Santry nor their combination discloses, teaches or suggests the subject matter of the amended claim 7. As such, amended claims 11-13 are patentable over the combination of Parker and Santry for at least the reasons stated above with regard to claim 7. Thus, the rejection of claims 11-13 is respectfully traversed. The Examiner is requested to reconsider and withdraw his rejection of claims 11-13.

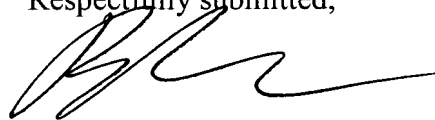
No new matter has been added.

The claims currently presented are proper and definite. Allowance is accordingly in order and respectfully requested. However, should the Examiner deem that further clarification of the record is in order, we invite a telephone call to the Applicants' undersigned attorney to expedite further processing of the application to allowance.

Applicants believe that no additional fees are due with the filing of this Amendment. However, if any additional fees are required or if any funds are due, the USPTO is authorized to charge or credit Deposit Account Number: 50-0311, Customer Number: 35437, Reference Number: 25452-013.

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Respectfully submitted,



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